**Clinical Nutrition – Weight Management Study Guide**

Obesity:

Risk of being overweight > 70%

Being obese > 30%

Percentage of people being overweight and obese has been going up over the past few decades

Factors/ causes of Obesity:

1. Genetics (> 250 Genes, markers, & chromosomal regions)
   1. Garrow study = Some people do not put on excess weight easily when over fed
      1. He lose gained weight easily as well
   2. Bouchard study = More variation between two identical twin groups then within the identical twins themselves
      1. Indicates genetics a bigger factor than the environment
   3. Liebel study = Higher Body weight = Higher Basil Metabolic Rate (BMR) & vice versa
   4. Nonexercise Activity Thermogenesis
      1. Brown adipose tissue 🡪 Contains Uncoupling Protein 1 in mitochondria
      2. Heat by uncoupling ETC from ATP generation (Dissipates H+ gradient)
      3. UCP 2 & 3 in skeletal muscle 🡪 involved in nonshivering thermogenesis
   5. Differences in genetics can result in differences in:
      1. BMR
      2. Thermic effect of food
      3. Habitual physical activity
      4. Food Preferences
      5. Appetite & portion control (size & frequency of eating)
      6. Cost of low to moderate activity
2. Environmental Factors
   1. Poor Diet
   2. Physical Inactivity
3. Interactions of genetics with environment
   1. Pima Indians in America BMI > Pima of Mexico (Pima = Thrifty gene = predisposing to being overweight)

Obesity Affects:

1. Increases Mortality
   1. Higher BMI = Higher risk of dying from CVD
   2. Having Metabolic Syndrome = higher risk of mortality
2. Economic Cost
   1. Obese <65 y/o = 36% higher healthcare expenditures than normal weight people
   2. Rack up costs in Medicare and Medicaid
   3. Cost more to employers (higher medical expenses & absences)
   4. Medical Costs for Men = higher with high body weight & age (age = little effect)
3. Increases Risk for developing and contributing to a myriad of health problems
   1. A lot of health problems ranging from Skin to Brain and Respiratory Problems
   2. As BMI increases the risk also increases
   3. Gaining weight as an adult = higher risk of developing Type II Diabetes (DM)
   4. Waist Circumference > 40 inches in men and > 35 inches in women = High risk

Weight Loss & Health: (Always shoot for 5% - 10% weight loss)

🡪 Insulin Sensitivity in Type II Diabetics improves with weight loss

🡪 Framingham Study = Weight gain increases risk of CHD & weight loss decreases risk of CHD in men & women

🡪HbA1C levels decrease in diabetics with weight loss

1. Plasma Lipids improve with weight loss
   1. TGs decrease
   2. Total C decreases
   3. LDL-C decrease
   4. HDL at first goes down but then increases after weight is stabilized
2. Blood Pressure improves
   1. Systolic and Diastolic go down with weight loss
   2. Systolic goes up with weight gain
3. Apnea-Hypoapnea Index
   1. Improves (decreases) with weight loss
   2. Worsens (increases) with weight gain

Regulation of Body Weight

🡪Intake > Expenditure = Weight gain

🡪Long-term Positive Energy Balance leads to obesity

\*\*Can be more complicated though\*\*

Active Person Expenditures = 60% BMR, 8% Thermic Effect of food, 32% physical Activity

Inactive Person Expenditures = 75% BMR, 8% Thermic Effect of food, 17% physical Activity

BMR Expenditure = Organs>Skeletal>Skin & Bone> Adipose

🡪Most overweight people have normal metabolism

🡪People tend to under report Energy Intake & over report physical activity

1. Basal metabolic rate affected by calorie intake
   1. Decreased calorie intake can decrease basal metabolic rate (i.e. skipping meals)
2. Regulation of food intake
   1. Food is ingested
   2. Causes stimulation of tissues to release substances
   3. Brain involved in regulation
   4. External environment can affect regulation as well

\*\*\*Establish Healthy Eating Habits\*\*\*

🡪Skipping meals = over eating later

🡪Physiology can be more powerful than willpower

🡪Small positive energy balances over longer periods can result in great weight gain

🡪Avoid drinking a lot of calories (Americans get >400/day from drinks)

Recommending Weight Loss: (shoot for 5%-10% 🡪 pts can be unrealistic at first)

\*\*\*Permanent weight loss can be difficult to achieve\*\*\*

🡪Short term therapy usually does not result in long term loss

🡪Maintained weight loss therapy needed to maintain loss

\*\*\*weight loss of 5% shown to have significant benefits\*\*\*

1. Assessing for weight loss potential
   1. Motivation 🡪 pt. seeks weight reduction
   2. Stress level 🡪 Free of major crises
   3. Psychiatric issues 🡪 Free of these
   4. Time available 🡪 15 – 30 minutes/ day for 26 weeks
2. Treatment (in order)
   1. Diet and exercise (Overweight, Obese Class I, II,III)
   2. Drugs (Overweight with co-morbidities, I, II, III)
   3. Surgery (II with co-morbidities & III)

Change of Diet:

Things to adjust:

1. Lower calorie high drinks
2. Eat nutrient dense/low calorie fruits and veggies
3. Eat Balanced meals
4. Discourage restrictive diets

Decrease in fat consumption = weight loss

🡪Be careful of reduced/low fat foods they usually have same calories = added sugars

1. Density of foods
   1. High density = weight gain
   2. Medium density = maintenance
   3. Low density = lose weight

Adding Sucrose increases calorie intake

Higher portion size = higher calorie intake

Alcoholic beverages have higher caloric values

Exercising:

1. Regular Physical Activity
   1. Increases muscle mass (loose less muscle mass)
      1. May not see weight loss because of this
      2. Dieting can cause a loss in muscle mass (Diet + Exercise = no/little loss)
   2. Increases cardiovascular/ metabolic health
   3. Maintains weight loss
      1. High levels of activity need to maintain

\*\*Exercise alone usually does not result in weight loss\*\*\*

\*\*Higher activity = higher weight loss\*\*

\*\*Decrease in sedentary activity (decrease TV time) = greater effect then just exercise alone\*\*

1. Types of exercise
   1. Home based:
      1. More effective than group based
      2. Higher probability of maintaining
      3. More convenient
   2. Short-time activity
      1. Tend to do more frequently
      2. Greater weight loss
      3. Better than Long-time activity (hard to find time)
2. Benefits of physical activity
   1. Weight loss
   2. Decrease in risk for CVD
   3. Decrease a myriad of other risk factors
   4. Increased HAPPINESS ☺

\*\*\*Plan of Action

1. Assessment
   1. Motivation
   2. Emotional state
   3. Psychological state
   4. Time commitment
2. Develop Plan (help by picking easily compliant exercise 🡪 at home, short, etc.)
3. Gradually increase activity to 200 min/week

Alternatives to Exercise and Diet:

1. Drugs
   1. A number of them out there
      1. Inhibitors of pancreatic lipase (Orlistat/Xenical)
         1. Usually do not show great weight loss or improvement
      2. Monoamine (Ser, Norepi, Epi, Dop) reuptake inhibitors (Sibutramine/Meridia)
         1. Not that much weight loss
         2. good at maintaining weight loss if used persistently
         3. Has adverse effects though (cardiovascular)
   2. Most effective when used alongside diet and exercise modifications
   3. \*\*\*Some medications can cause weight gain\*\*\*
2. Bariatric Surgery
   1. Indications
      1. BMI > 40
      2. BMI > 35 with co-morbidities
      3. Appropriate Assessment
      4. Other methods not effective
   2. Procedures
      1. Restrictive (Make amount in stomach smaller)
         1. Gastroplasty
         2. Lap band
      2. Malabsorptive
         1. Duodenal switch (most weight loss 🡪 BMI > 55)
      3. Combination
         1. Roux-en Y Gastric Bypass (most common & laparoscopic)